



LEWS NEWS



Photo: US Fish and Wildlife Service

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Protecting Lake Erie's Natural Heritage

Update: Nerodio 2004!

The annual Lake Erie Watersnake (LEWS) round-up and census was more successful than ever this year! A total of 17 individuals captured, measured, marked, and released 1500 individual LEWS. The Bass Islands, Kelleys, Rattlesnake, Sugar, Ballast, and Gibraltar were all surveyed during May and June 2004. More than 1200 adult snakes were captured, including more than 250 snakes that had been recaptured from previous years. The census is conducted each year to provide data from which researchers can calculate a LEWS population estimate for each U.S. island individually, and for the entire U.S. population. A population estimate is needed to assess how close the snakes are getting to recovery, and ultimately removal from the endangered species list.

One of the most notable finds for this year included a recapture of a snake marked as an adult in 1996, the first year researchers started using the PIT tagging system (small microchips inserted under the snake's skin, and read by waving a hand-held scanner over the snake's body—see photo page 5). Given the 8 years between the first capture of this snake and this year's capture, and the fact that the snake was about 4 years old when first captured, this snake is estimated to be at least 12 years old!

In addition to using the census for population estimates, it also provided a good opportunity to collect prey items from individual LEWS. Researchers recovered 166 prey items from 155

individual snakes. How is prey recovered? It usually involves a simple and rather gross method of causing the snake to regurgitate its most recent meal (also referred to as “barfing” a snake)! Interestingly, 93% of the LEWS prey were round gobies, a non-native, invasive fish species.

Kristin Stanford, the Island Snake Lady, is researching the survivorship of newborn LEWS. Last fall, a number of newborns were marked with PIT tags and released at South Bass Island State Park, where their mothers were captured. This summer's census resulted in a number of recaptures of baby snakes that survived the winter. This information will provide valuable information on the pre-adult life history of the LEWS.

-Dr. Rich King
Northern Illinois University



How many of these newborn snakes will survive the long, cold island winter? Research by Kristin Stanford will help answer this question.

Photo: Dr. Rich King

Exploring Ohio's Wilderness: West Sister Island National Wildlife Refuge

Birds, birds, and more birds.... This statement goes a long way in describing a visit to West Sister Island, a unique part of the Ottawa National Wildlife Refuge (NWR) Complex, managed by the U.S. Fish and Wildlife Service (Service). West Sister Island NWR is Ohio's only Federal wilderness area, located about 9 miles offshore of Carroll Township, Ottawa County, Ohio.



West Sister Island National Wildlife Refuge. This 82-acre island is Ohio's only Federal wilderness area and supports the largest concentration of colonial nesting waterbirds in the Great Lakes.

From War Grounds to Wildlife Habitat

West Sister Island took its place in history during the War of 1812. It was here, on September 10, 1813, that Commodore Oliver Hazard Perry sent the immortal message to General William Harrison after the Battle of Lake Erie: "We have met the enemy and they are ours. Two ships, two brigs, one schooner and one sloop."

The Coast Guard lighthouse on West Sister Island NWR is the only human-made structure in existence on the island, and is listed on the National Register of Historic Places. The lighthouse was built in 1847 and was maintained year-round by keepers employed by the United States Coast Guard. Trees were cut for firewood and domestic livestock grazed the land, which kept at least half the island in a grass/shrub state. Once the light was automated in 1937, and no tenders were necessary, President Franklin D. Roosevelt established West Sister Island "as a refuge and breeding ground for migratory birds

and other wildlife....," and it was specifically designated to protect the largest wading bird nesting colony on the U.S. Great Lakes. Seventy-seven acres of the island was then turned over to the Service to manage as part of the National Wildlife Refuge System. The remaining five acres of the island, including the lighthouse, remained in Coast Guard ownership. The deserted island then began its reversion to a completely natural area.

An Island for the Birds

The Ottawa NWR Complex is a major feeding, nesting, and resting area for migrating birds including songbirds, shorebirds, waterfowl, raptors, and colonial nesting waterbirds. The refuge preserves portions of the historic Lake Erie marshes and Great Black Swamp habitats. West Sister Island though, is a very unique habitat unlike the rest of the NWR Complex. This 82-acre island supports a unique assemblage of colonial nesting waterbirds--the largest congregations of these animals in all of the Great Lakes. Much like the other western basin Lake Erie Islands, West Sister Island NWR is composed of glacial till over a limestone shelf. The limestone shelf forms cliffs and coves on the north edge of the island. Tall hackberry trees with an understory of abundant poison ivy, some of it 12 feet tall, dominate most of the island. Great Solomon's Seal reaches 7-9 feet in height and a great variety of ferns, wildflowers, mushrooms and other plant life abound. The soil contains a great amount of clay, loam and humus layers which are whitewashed annually by the "droppings" of thousands of nesting colonial birds. These "droppings" and the moisture provided by the lake attract thousands of biting flies and mosquitos, creating a good home for wildlife, but not for humans.

The island's rare and undisturbed habitat supports the largest heron and egret rookery in the Great Lakes, totaling over 3,800 nests; Great Blue Herons and Great Egrets comprise 65% of the nesting birds, followed by Black-crowned Night Herons. Various Gull species and Double-crested Cormorants also nest on the island. Although the

island's trees provide ideal nesting habitat for these species, the water around the island is too deep for the wading birds to feed in, so they must travel an eighteen-mile round-trip to the mainland marshes to hunt for food for themselves and their young.

The management focus on West Sister Island NWR is to provide high quality nesting habitat for these unique bird colonies. To protect this vital nesting area, public access is permitted for research only, and no mechanized equipment is permitted on the island. Surveys are conducted twice during the nesting season to determine nesting success and population trends for the egrets and herons. Various other surveys are conducted on the island before and after the critical nesting period. In addition, a pilot habitat program designed to create a younger forest of hackberry trees to support nesting Black-crowned Night Herons started in 1997. This consists of using hand-saws to cut one acre of trees each season to allow for re-sprouting and growth. This has provided a shrub layer, an important habitat component, for the nesting black-crowned night herons.



Gulls swarm around the West Sister Island lighthouse.

Beyond birds

West Sister Island NWR, by nature of its limestone bedrock composition and location among rocky shoals in Lake Erie, is surrounded by high quality fish habitat. This area is significant especially for fish spawning, and helps to support a multi-million dollar fishing and tourism industry in both the U.S. and Canada. The density of fish helps sustain the

large bird populations on the island by providing a much-needed food sources for birds like gulls.

Would any Lake Erie island be complete without a population of Lake Erie Watersnakes (LEWS)? Perhaps in this case the answer is “Yes?” LEWS are known from West Sister Island based on specimens collected there in the 1930s, but no watersnakes were found during repeated searches in the 1980s and early 1990s. A visit to the island in July 2002 resulted in the capture of one adult female watersnake. The color pattern of this watersnake was dark and distinctly banded as is seen in mainland populations of Northern Watersnakes and in some LEWS. Given that West Sister Island is about equally isolated from the mainland and from the next nearest island, this snake could represent an immigrant from either a mainland Northern Watersnake population or an island LEWS population. Therefore, the status of the LEWS on West Sister Island remains in question. Scientist have several guesses why snakes may have disappeared from West Sister, although no one knows for sure. A severe weather event (such as an especially cold winter) or a disease may have killed many of the snakes inhabiting the island. Perhaps the extremely large bird population on the island also contributed to the demise of the LEWS on West Sister Island; Birds are known to prey on snakes, especially on young, small snakes. Because the island is so far from other LEWS populations, it would have been difficult for LEWS on other islands to make their way to West Sister to supplement the existing population or to repopulate the island. Most likely it was a combination of multiple factors that caused LEWS to disappear. With the currently expanding LEWS populations on the other Lake Erie islands, and the recent recolonization of Green Island, perhaps one day soon West Sister Island will once again support a healthy LEWS population.

To find out more about West Sister Island NWR and the rest of Ottawa NWR, check out their website: <http://midwest.fws.gov/ottawa/ottawa.html>

The Nature Conservancy: Working for Conservation of the Lake Erie Islands

The Great Lakes ecoregion — 234,000 square miles of open water, wetland, forest, and grasslands — includes 11,000 miles of shoreline and covers eight U.S. states and one Canadian province. It's ecological, economic, and social values can't be overstated: 20 percent of the world's supply of freshwater; 185 globally rare plants, animals and natural communities; about one-fifth of the fish species in North America. The Great Lakes basin is home to more than one-tenth of the U.S. population and one-quarter of Canada's. Twelve percent of the world's annual gross domestic product is produced here, connected to the world's markets through the St. Lawrence Seaway. Despite the modifications and changes that have occurred within the Great Lakes system, the biodiversity and aquatic and terrestrial life remain rich (<http://nature.org/wherewework/northamerica/states/ohio/science/art11060.html>).

The western Lake Erie islands and nearshore reefs, for example, offer incredibly diverse aquatic and terrestrial habitat. They've been ranked as the most productive fish-breeding grounds in the Great Lakes. They're critical resting grounds for migratory birds. And they're the home to some species, like the Lake Erie Watersnake, found nowhere else in the world.

The Nature Conservancy's Ohio Chapter and Nature Conservancy Canada, working with more than 40 partners, have developed a Conservation Area Plan for the western Lake Erie islands. The plan suggests a variety of strategies for protecting these important islands, which include Kelleys and the popular Bass Islands on the U.S. side and Pelee Island on the Canadian side. This past year, the Ohio Chapter of The Nature Conservancy has been focused on developing and implementing conservation projects that align with the strategic goals of the Plan, as well as supporting partner organizations in their efforts. During the last year, the following activities were completed:

- **Identification and Protection of Priority Sites.** Ohio Chapter staff have been working with the Black Swamp Conservancy/Lake Erie Islands

Chapter, Ohio Department of Natural Resources, Ohio State University, and others to identify and map high priority sites for protection, determine parcel availability, and develop strategies for funding and securing parcels. The Ohio Chapter contributed \$10,000 to Black Swamp Conservancy for acquisition of Petersen Woods, a 1.55 acre parcel on the north shore of North Bass Island that provides habitat for bald eagles and the Lake Erie Watersnake. The Ohio Chapter is also contributing \$14,000 to the Cleveland Museum of Natural History to acquire the Williams Tract on Kelleys Island, adjacent to their Scheele Preserve.

- **Protection of Pelee Island, Canada.** Ohio Chapter staff visited Pelee Island in May 2004 to meet with staff from Nature Conservancy of Canada, Pelee Island Bird Observatory, the Wilds of Pelee, Pelee Island Heritage Centre, and others to evaluate potential acquisition sites and further develop our fundraising strategy to secure top priority sites.

- **Lake Erie Islands Field Guide and Survey.** The Ohio Chapter, working in partnership with Lake Erie Coastal Ohio, helped secure \$29,500 from the Lake Erie Protection Fund to develop a Lake Erie Islands Field Guide and Survey. The project will increase awareness of the islands' natural and historic resources, encourage nature-based tourism and compatible development practices, and engage more people in conservation efforts. Completion of the field guide is expected in Spring 2005.

- **Protection of Migratory Bird Stopover Sites.** Ohio Chapter staff helped Great Lakes Program staff secure \$70,000 from The George Gund Foundation to identify and protect high value sites that sustain migratory birds. The project will focus on the critical areas needing protection in Ohio's western Lake Erie basin while also building an overarching strategy for protecting critical bird stopover sites throughout the Great Lakes region. A team of public and private organizations, including the U.S. Fish and Wildlife Service, Ducks Unlimited, and Ohio and Michigan Departments of Natural Resources will be working with TNC in this effort.

- **Lake Erie Wetlands and Watersheds Implementation Team (LEWWIT).** Due to the potential impacts from mainland activities on the habitat of the islands and nearshore bedrock reefs, Ohio Chapter staff recently became involved in the

LEWWIT. A team of public and private organizations is working together to identify and implement habitat conservation projects in the Lake Erie wetlands and watersheds of Northwest Ohio.

The Ohio Chapter will continue working to protect the Western Lake Erie Islands and Reefs. We are currently seeking funds to support our continued work from identified individuals and foundations. As a working document, we will continue to reevaluate and adjust the Site Conservation Plan for the Western Lake Erie Islands for maximum conservation results.

For more information on The Nature Conservancy's work in Ohio, check their website: <http://nature.org/wherewework/northamerica/states/ohio/> or contact Kay Carlson (see below).

-Kay Carlson
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Researchers use a scanner to determine if this snake has already been captured and marked with a tiny electronic PIT tag. Using a mathematical formula, scientists can make an estimation of population size based on the number of new captures and recaptures at a given site. Photo: USFWS

LEWS Across the Border



Biologists with the Ontario Ministry of Natural Resources (OMNR) have been busy over the last few years with their own Lake Erie Watersnake research on several of the Canadian Islands of the Lake Erie Archipelago. The Lake Erie Watersnake has been classified as an endangered species in the Province of Ontario since the early 1970s and is designated as Endangered at a national level as well. Of the 22 islands in the Lake Erie Archipelago, 9 belong to Ontario and 4 of these, Pelee Island, Middle Island, East Sister Island and Hen Island currently support LEWS populations.

Richard King had conducted a significant amount of research on the Canadian LEWS populations in the early 1980s while conducting research for his doctoral thesis. In the late 1990s, the Canadian Wildlife Service initiated a contaminant analysis study of the snake, but the ecology-type field work didn't get back into full swing until 2001 with the initiation of radiotelemetry study on Pelee, Middle and East Sister Islands, similar to the work that was already underway on several of the U.S. Islands. Over a two year period, 23 LEWS implanted with radio-transmitters and this work allowed OMNR staff to identify the snake's habitat as well as the locations of their hibernacula, or wintering sites. This information has proved very valuable to biologists, who are working hard to guide cottage development on Pelee Island in a snake-friendly direction.

In addition, population surveys have been underway since 2001 on Middle Island and East Sister Island. At approximately 50 acres each, both of these islands are 100% protected as parts of the National and Provincial Parks systems respectively, and are small enough to allow complete coverage by researchers while conducting their population censuses. Pelee Island, with its more than 20 miles of shoreline and numerous inland canals, is much larger and presents unique challenges to researchers trying to (Cont. on pg. 6)

(Cont. from pg. 5)

determine population size. In 2004, efforts were renewed to develop a method of population monitoring that would use visual surveys as well as mark-and-recapture studies on representative areas of shoreline. It is hoped that in a few years time, these results can be extrapolated and be used to determine a LEWS population estimate for the entirety of Pelee Island. In the meantime, work is underway to develop a National Recovery Strategy for the species, which will guide efforts to ensure the protection and recovery of the Lake Erie Watersnake into the future.

Over the years, Canadian and U.S. researchers and government staff have been in regular contact with each other, keeping up-to-date with the research, education and conservation activities of the other. In September 2003, Dr. King had an

opportunity to return to Pelee Island, when he, along with his former students Kristin Stanford and Julie Ray, as well as Megan Seymour of the U.S. Fish and Wildlife Service, visited the island to attend the Annual Conference of the Canadian Amphibian and Reptile Conservation Network (CARCNET). Dr. King gave a keynote address on the Lake Erie Watersnake, and used the opportunity to re-visit some of his prior research sites and to continue with some of the contaminant research mentioned earlier. Joined by Deb Jacobs, a LEWS researcher from the OMNR, the group of LEWS experts managed to find and capture more than enough snakes to consider the field work a great success.



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